

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. – 3. (Canceled)

4. (New) A plasma etching apparatus comprising a vacuum processing chamber and a pair of parallel plate electrodes opposite to each other that are disposed in said vacuum processing chamber, one of said electrodes being used also as a sample table capable of holding a sample having a diameter of 300 mm or more,

wherein a gap between said electrodes is set to 60 mm or less and a plasma with a density of $5 \times 10^{10} \text{ cm}^{-3}$ to $5 \times 10^{11} \text{ cm}^{-3}$ is generated between said electrodes by applying a high-frequency electric power by use of a high-frequency power source between said electrodes, and

an ion energy controlling bias electric source is connected to said electrode being used also as the sample table, to use surface reaction between said pair of opposed electrodes effectively so as to obtain a high selective ratio of etching.

5. (New) A plasma etching apparatus according to claim 4, wherein a means for setting an atmospheric pressure inside said vacuum processing chamber to 0.4 Pa to 4.0 Pa is provided.

6. (New) A plasma processing apparatus comprising a vacuum processing chamber and a pair of electrodes opposite to each other that are disposed in said vacuum processing chamber, one of said electrodes being used also as a sample table capable of holding a sample having a diameter of 300 mm or more containing an insulator film,

wherein said plasma processing apparatus further comprises:

a gas introducing means for introducing an etching gas containing fluorine and carbon into said vacuum processing chamber;

a high-frequency power source to generate a plasma with a density of $5 \times 10^{10} \text{ cm}^{-3}$ to $5 \times 10^{11} \text{ cm}^{-3}$ between said pair of electrodes; and

a bias electric power source connected to said sample table to control energy of ions in said plasma.

7. (New) A plasma processing apparatus comprising a vacuum processing chamber and a pair of electrodes opposite to each other that are disposed in said vacuum processing chamber, one of said electrodes being used also as a sample table capable of holding a sample having a diameter of 300 mm or more containing an insulator film,

wherein a gap between said pair of electrodes is set to 60 mm or less,

wherein said plasma processing apparatus further comprises:

a gas introducing means for introducing an etching gas containing fluorine and carbon into said vacuum processing chamber;

a high-frequency power source to apply a high-frequency electric power between said pair of electrodes so as to generate a plasma with a density of $5 \times 10^{10} \text{ cm}^{-3}$ to $5 \times 10^{11} \text{ cm}^{-3}$ between said electrodes; and

a bias electric power source connected to said sample table to control energy of ions in said plasma.